


Climate Change Working Group – Energy Presentation

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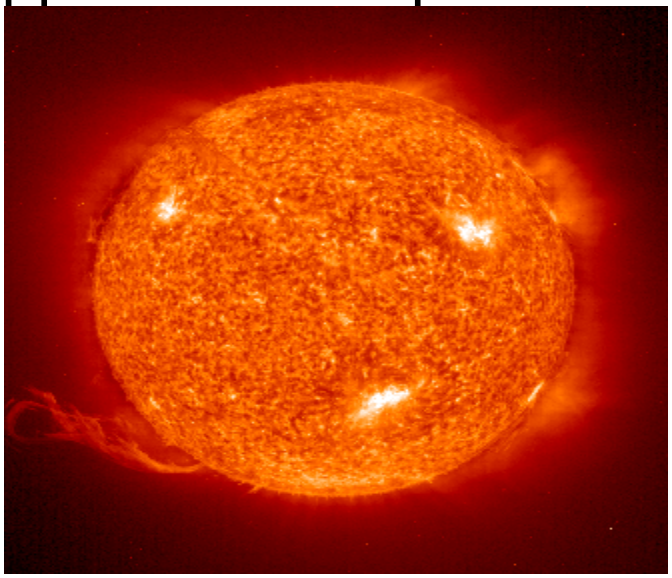
Chula Vista
February 10, 2010

ENERGY and the Environment

We all use energy every day – for transportation, cooking , heating and cooling rooms, manufacturing, lighting and entertainment. The choices we make about how we use energy- turning machines off when we are not using them or choosing to buy energy efficient appliances – impact our environment and our lives.



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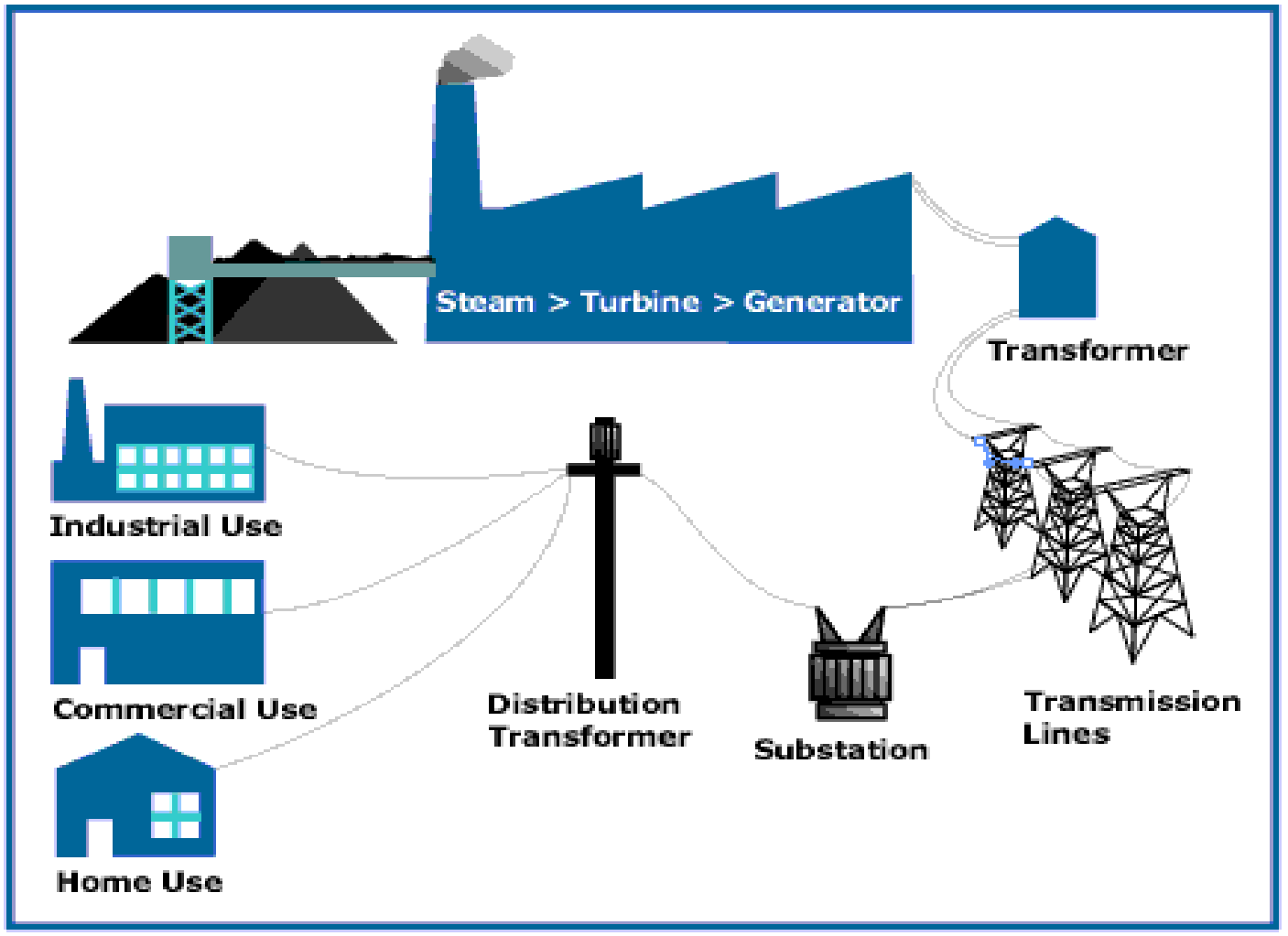
ENERGY: Electricity How it Works:



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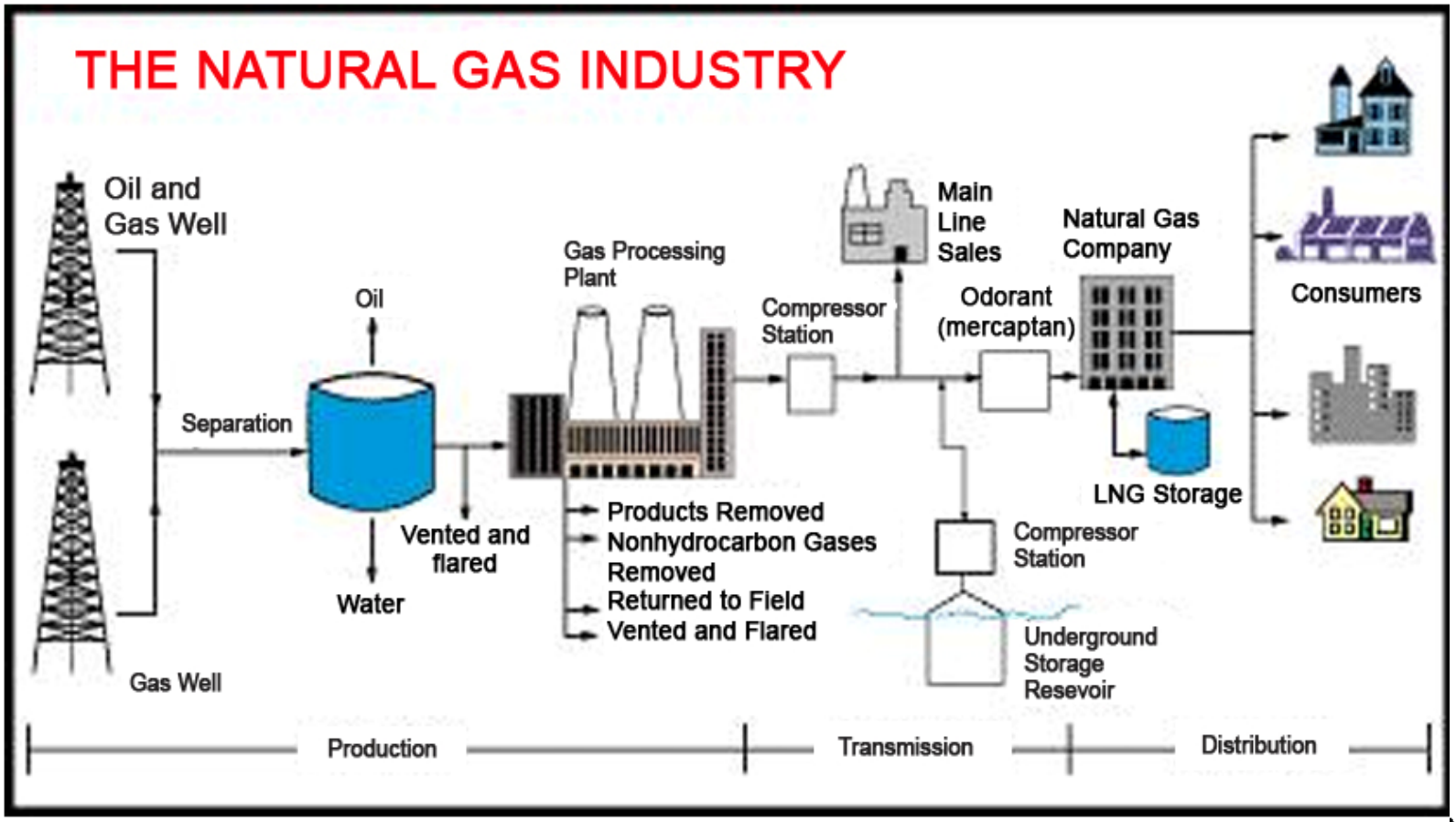
Natural Gas 101: How it Works



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Energy Sources

Two types of Energy Sources:

Non renewable: About 93% of the energy consumed in the United States comes from non-renewable energy sources, which include uranium ore and the fossil fuels – coal, natural gas and petroleum.

Renewable: Renewable sources include biomass, hydropower, geothermal, wind and solar which provide 7% of the energy used in the United States.

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Our energy future…


Win


Lg. Scale Solar


Dist. Solar


Smart Homes


Smart Buildings


Nuclear

Smart Grid

Smart Meters

Energy Flow


Dist. Power


NG Power Gen

CO2


Enhanced Oil Recovery


Biofuels


Gas Storage


Clean Transportation

SDG&E Energy Planning Guidelines

Plan must comply with state's policy of prioritizing:

1. **Energy Efficiency** to reduce overall energy consumption
2. **Demand Response** to reduce energy use during periods of high demand
3. **Distributed Generation** which focuses on smaller plants, many of which serve a customer's own energy needs
4. **New Innovations** to meet customer needs in the future
5. **Renewable (Green) Power** to meet 33% of energy needs by 2020
6. **New Power Plants** that use the latest natural gas technology
7. **Added Transmission Investment** to deliver renewables to market

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Resource Planning

- SDG&E's existing plan includes the following key elements:
  - Projects customers' electricity needs over a ten-year horizon
  - Looks to balance reliability, cost, environmental impacts
  - Meets state policies goals, such as renewable energy targets
  - Determines the need for new resources
  - Explains how we will obtain sufficient energy resources to meet those needs
  - Includes details about the types of resources that will be utilized
  - Must be reliable - meet system peak demand for electricity

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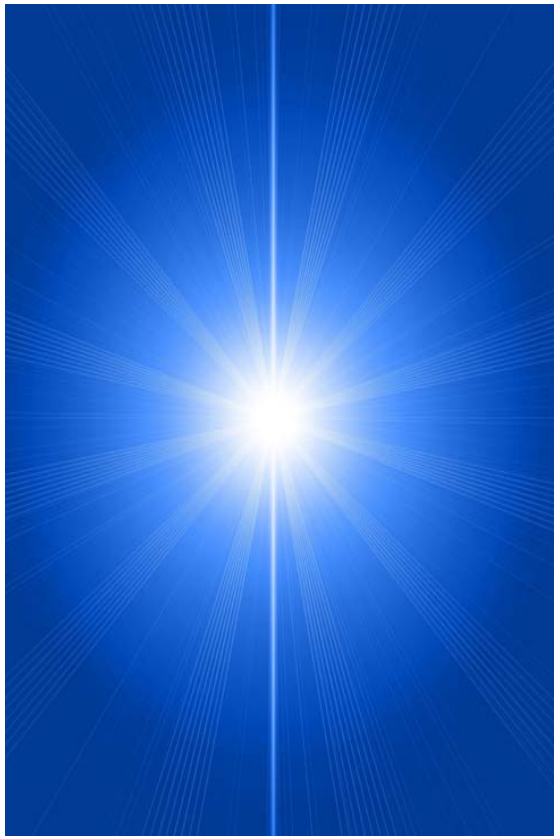
Meeting Peak Demand

- Even with energy efficiency savings, SDG&E grows at approximately 100 MW a year.
- 2006 Peak Demand = 4195 MW
- 2009 Peak Demand = 4640 MW



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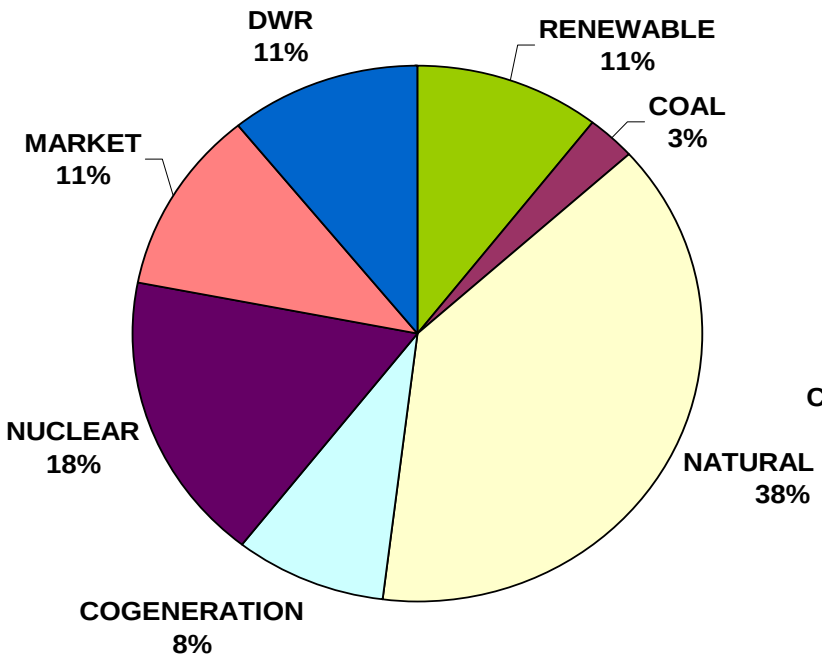
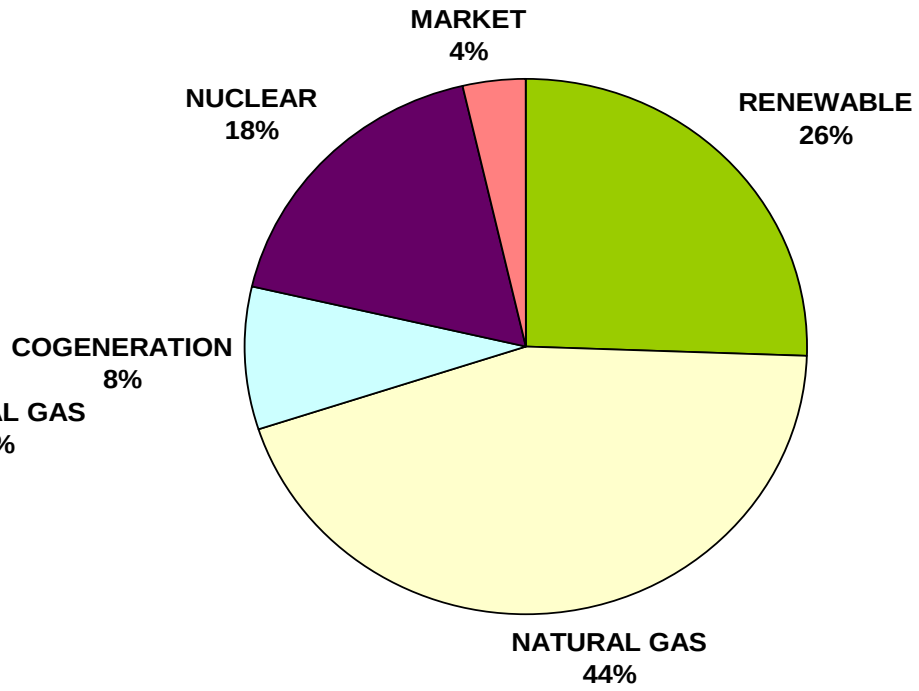
SDG&E's Customer Energy Mix - Today vs. 2015

2009 (est.)



2015 Forecast



Energy mix based on SDG&E bundled customer supply portfolio

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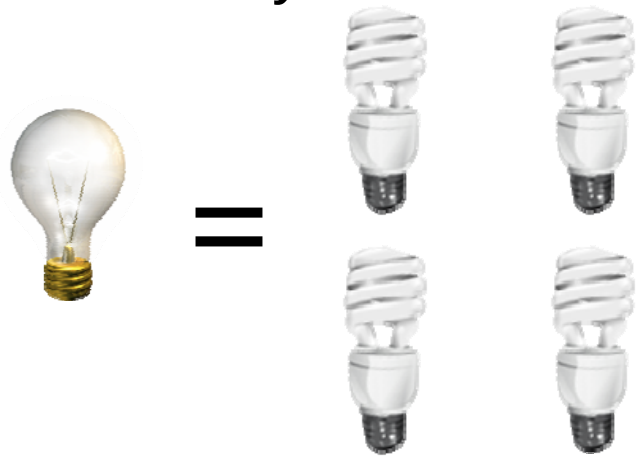
Energy Efficiency

- SDG&E has invested $485 million in energy-efficiency programs, saving over 2.9 million mega-watt hours of electricity over the last 15 years
- Current Plan: Achieve all “cost effective” energy efficiency



Demand Response

- Temporarily reducing electricity use, or shifting the time you use electricity from times when demand for energy is at its highest
- Examples: Time of use rates, smart meters, cycling air conditioners
- Current plan: Use of smart technology and pricing incentives to help customers reduce during peak times

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SDG&E Energy Efficiency Programs and Services

- Institutional Partnerships
- Local Government Partnerships
- Energy Savings Bid Program (ESB)
- Energy-Efficiency Business Incentives (SPC)
- Energy-Efficiency Business Rebates (Express)
- On-Bill Financing Option
- The Cool Planet Project
- Multi-Family
- Whole House

Demand Response Programs

- Critical Peak Pricing/Emergency
- Technical Assistance/Technology Incentives (TA/TI)
- Summer Saver

Other Programs:

- Other Programs Third Party Programs
- Savings By Design --Commercial New Construction

Distributed Generation

- Small-scale power generation technologies
  - Rooftop photovoltaics, fuel cells or small turbines, located on-site at a customer's business or home
- California Solar Initiative and other programs have resulted in 20.5 MW of PV
  - 2,338 residential projects
    - Totaling 10,265.1 kW
  - 105 non-residential projects
    - Totaling 10,487.5 kW
- Current Plan: California Solar Initiative (state wide roof- top PV program), Self-Generation Incentive Program, SDG&E Solar Energy Project will continue growing this sector

Photo credit: FuelCell Energy

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New Innovations: Clean Transportation

- Focused on speeding the growth in the Low Emission Vehicle sector
- Provide infrastructure to support natural gas, electric, hybrid, hydrogen and biofuel vehicles
- Education, outreach and demonstration programs

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New Innovations: Sustainable Communities Program

Help advance sustainable development in the San Diego area

- Integrate utility-owned clean generation systems within green buildings
- Cash incentives for sustainable buildings
- Creates local showcases & education
- Community clean power
- LEED® certification
- Payment for PV space

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Solar Energy Program

- The SDG&E Solar Energy Project will seek market priced PV projects for utility ownership and power purchase agreements
- Projects will be tied to SDG&E's distribution system and are expected to be in the 1 to 5 MW size
- Final CPUC approval expected in March 2010

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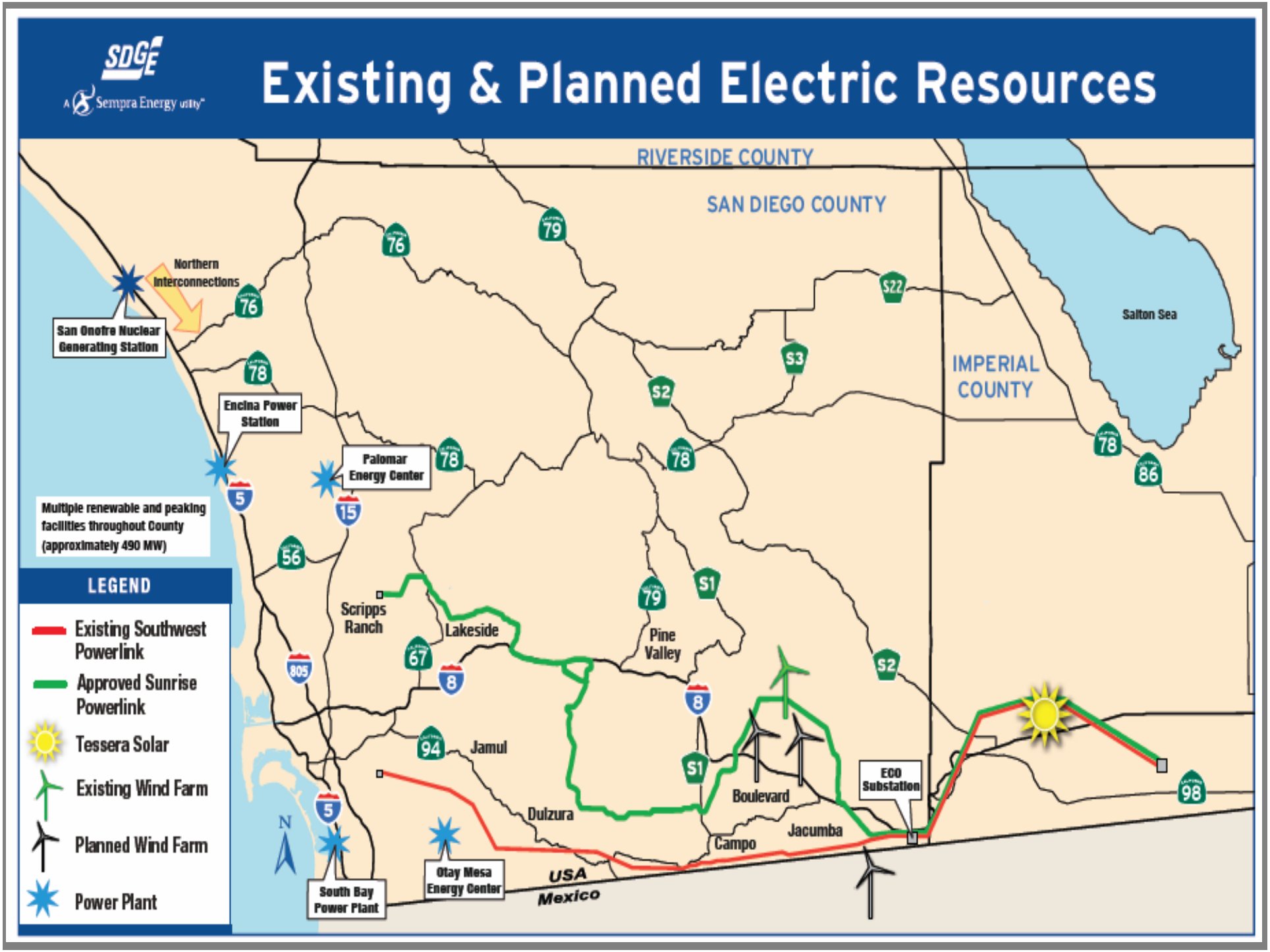
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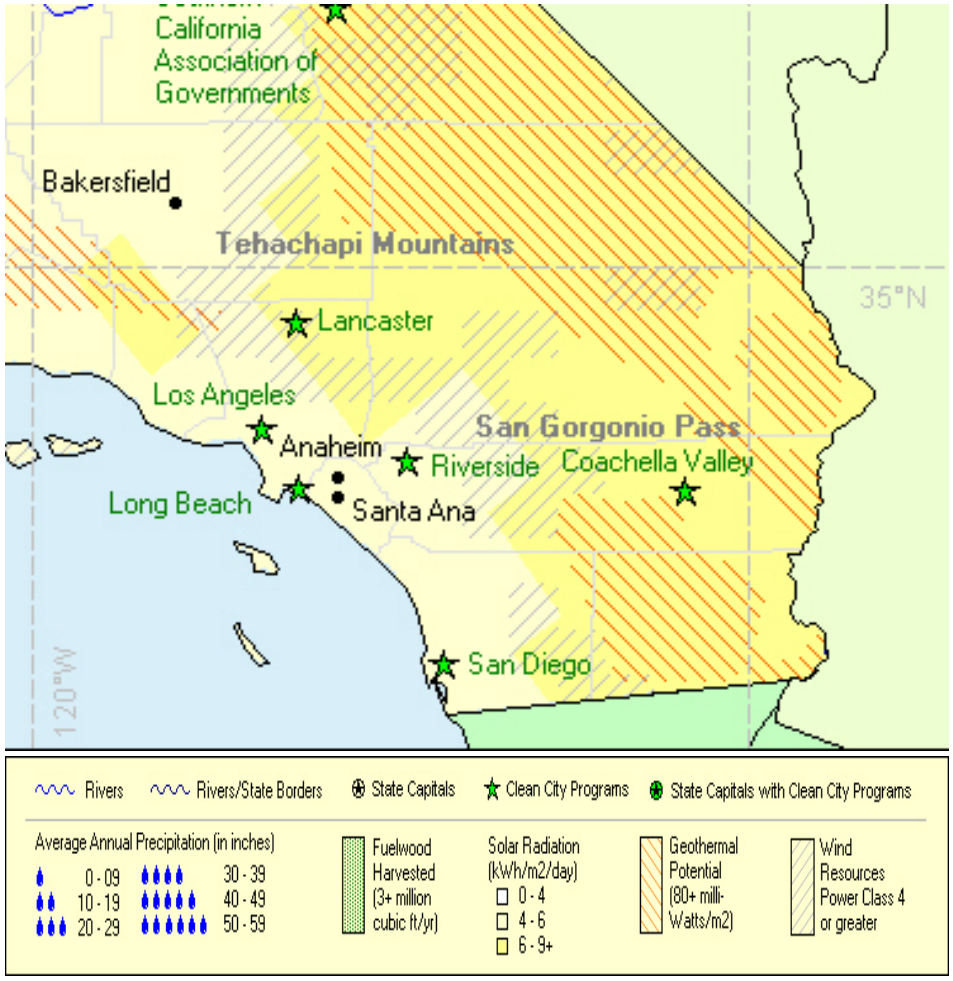
Existing & Planned Electric Resources
RIVERSIDE COUNTY
SAN DIEGO COUNTY
IMPERIAL COUNTY
Salton Sea
Northern Interconnections
San Onofre Nuclear Generating Station
Encina Power Station
Palomar Energy Center
Multiple renewable and peaking facilities throughout County (approximately 490 MW)
Scripps Ranch
Lakeside
Pine Valley
Jamul
Dulzura
Boulevard
Campo
Jacumba
ECO Substation
Otay Mesa Energy Center
South Bay Power Plant
USA
Mexico
N
LEGEND
Existing Southwest Powerlink
Approved Sunrise Powerlink
Tessera Solar
Existing Wind Farm
Planned Wind Farm
Power Plant

Achieving 33 Percent Renewable Energy



- Currently accounts for over 11 % of SDG&E's resources
- State law requires 20% renewables in 2010
- SDG&E has pledged 33% in 2020
- Current Plan: 33% in 2020

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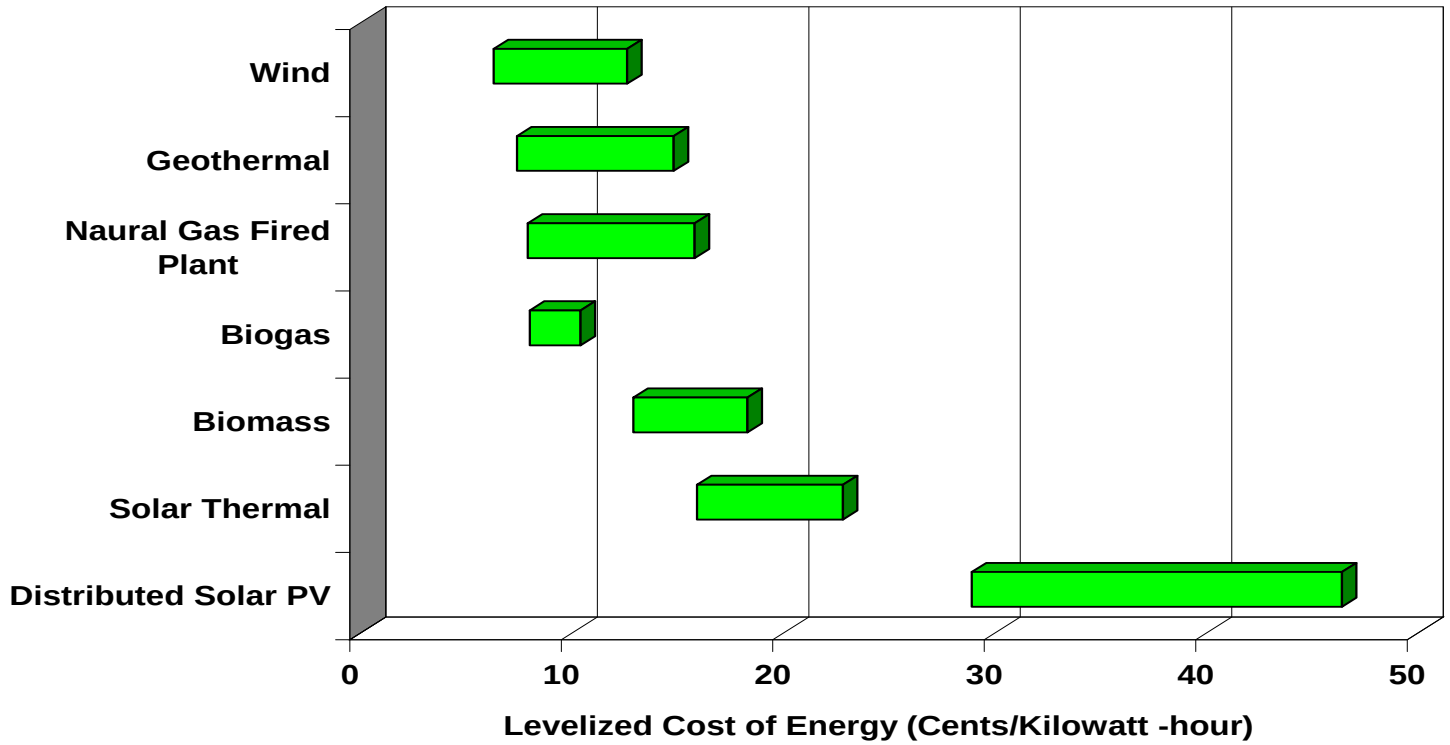
Energy Cost



Source: CPUC 33% Renewable Portfolio Standard Implementation Analysis, June 2009

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Renewable Projects and Ancillary Facilities Underway

- Campo Tribal Lands
  - 50MW wind energy facility currently selling power to SDG&E
  - Developing new 160MW wind energy project
- Tessera Solar utilizing Stirling Energy Systems SunCatchers
  - Contracts to construct up to 900MW dish facility in Imperial County
  - Developing a 60 dish, 1.5MW demonstration plant near Phoenix, AZ
- Esmeralda Geothermal
  - Two Imperial Valley projects in Truckhaven and San Felipe
- MMR Power Solutions
  - Mt. Signal Solar project in Imperial Valley
- Successful recent Renewable Energy RFO
- ECO Substation Project to deliver wind and other renewable power into San Diego

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Conventional Power Plants for Reliability

- Current Plan: Add new clean natural gas power plants locally to allow for the retirement of the older less efficient power plants
- 1,250 megawatts of new clean natural gas power plants have been added over the last 5 years in San Diego County.
  - Palomar Energy Center (565 MW)
  - Otay Mesa Energy Center (600 MW)
  - Miramar I and II Peaker Plants (95 MW)
- Another 140 MW are under construction or in final permitting
- Currently evaluating offers for additional plants that would come on line the 2013-2014 time frame

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Sunrise Powerlink Transmission Line

- 120-mile electric transmission line, capable of delivering 1,000 megawatts of clean, reliable energy
- Extensively reviewed by the CPUC
  and US BLM
  - Four-year regulatory review process
  - 43 public hearings
  - 11,000 page EIR
- $1.883 billion project
- 2010 – Construction
- 2012 – In-service date

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QUESTIONS ?